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BOTANY.

Botany at the A. A. A. S.—The recent meeting of the American Association for the Advancement of Science, was notable in the activity of the botanical part of the section of Biology. The attendance of working botanists was unusually large, although the faces of many well known men were missed in the meetings. Among those present may be mentioned: Professor J. C. Arthur, of Purdue University; Dr. T. F. Allen, of New York City; Professor T. J. Burrill, of the University of Illinois; Professor W. J. Beal, of the Michigan Agricultural College; Professor N. L. Britton, of Columbia College; Professor D. H. Campbell, of the University of Indiana; David F. Day, of Buffalo; Professor W. M. Dudley, of Cornell University; Professor G. L. Goodale, of Harvard University; B. T. Galloway, of the Botanical Division of the U. S. Department of Agriculture; Professor B. D. Halsted, of Rutgers College; Professor J. F. James, of the U. S. Geological Survey; Professor W. R. Lazenby, of the University of Ohio; Thomas Meehan, of Germantown, Pa.; John Macoun, of the Canadian Geological Survey; Professor T. H. McBride, of the University of Iowa; and Professor F. L. Scribner, of the University of Tennessee.

In the meeting of the Society for the Promotion of Agricultural Science, which preceded the meeting of the Association, several papers were read upon botanical subjects, as follows:

J. C. Arthur.—What is Common Wheat Rust?

W. J. Beal.—A Study of Birdseye Maple.

C. E. Bessey.—The Grass Problem in Nebraska.

T. J. Burrill.—A Bacterial Disease of Indian Corn.

B. D. Halsted.—The Cranberry Gall Fungus.

B. D. Halsted.—Our Worst Weeds.

The Botanical Club of the Association, under the management of its Chairman, Professor Burrill, and Secretary, Professor Campbell, held meetings every morning, at nine o'clock, in the room assigned to Section F, and took part in a most enjoyable excursion, on Thursday, to Scarborough Heights, on the shore of Lake Ontario, in quest of rare specimens.

In the sessions notelets were read upon The Fertilization of *Hypericum canadense*, and The Cleistogamy of *Cerastium nutans*, by Thomas Meehan; The Pollen of *Pontederia cordata*, and The Explosive pods of the Wild Bean, by B. D. Halsted; Certain Additions to the North

American Flora, The Occurrence of a Siberian Labiate (*Elsholtzia cruciata*) in Canada, a notice of Dr. Morong's South American Work, and a description of a new genus of Vacciniaceæ from Brazil (Rusbya), by N. L. Britton; The Work of the Botanical Division of the U. S. Department of Agriculture, by F. V. Coville; On the Occurrence of Chlorophyll, in the Embryo of *Celastrus scandens*, Studies in Nuclear Division and The Culture of Aquatics in the Laboratory, by D. H. Campbell; The Management of a South Exposure for the Laboratory, by J. C. Arthur. The veteran Canadian collector, John Macoun, discussed methods of work in the field, in which he stated that he had long since abandoned the use of the tin collecting box, using instead a portable press supplied with strong straps, and into this he places his specimens at once as found.

Dr. N. L. Britton was elected President for the ensuing year, Professor F. L. Scribner, Vice-President, and Professor Charles R. Barnes, of Madison, Wis., Secretary.

At the close of the meeting resolutions were adopted urging the governing body of the University of Toronto to favor the plans of Professor Wright for the establishment of a Botanic Garden upon the University grounds.

In the meetings of Section F, the best paper was the address by Vice-President Goodale, in which he gave a summary of the recent advances in our knowledge of protoplasm and the anatomy of the vegetable cell. This address created much enthusiasm, and gave strength to the movement which finally resulted in the election of Dr. Goodale to the presidency of the Association.

Of strictly botanical papers read in the daily sessions there were twenty, as follows:

J. C. ARTHUR.—“A Bacterial Disease of Carnations,” in which the author announced the discovery of a new micrococcus which produces one of the common diseases of carnations.

W. J. BEAL.—“Notes on Seedlings of *Elymus virginicus*,” noting the fact that glaucousness appears to be hereditary in this species.

W. J. BEAL.—“Notes on Bird's-Eye Maple,” illustrated by specimens, reaching the conclusion that the “bird's-eye” structure is due to some previous injury.

N. L. BRITTON.—“On the Genus *Eleocharis* in America,” “On the Tropical Distribution of Certain Sedges,” “On the Flora of New Jersey,” “The New Botanical Laboratory of Barnard College.”

T. J. BURRILL.—“A Bacterial Disease of Indian Corn.” The affected plants are smaller, yellow and slender. The bacteria are slightly

elongated, usually paired, and take a marked polar stain, with a broad hyaline equatorial belt.

T. J. BURRILL.—“Fermentation of Ensilage.” This appears to be due to *Bacillus butyricum*, a motile bacterium, which is capable of reproducing rapidly in the high temperature of the silo.

F. V. COVILLE.—“Revision of the United States Species of *Fuirena*.”

DAVID E. DAY.—“An Observation on *Calamintha nuttallii*,” noting certain suggestive variations, or reversions.

WM. R. DUDLEY.—“A Suggestion concerning Scientific Work,” urging that attention be given to the study of the Fresh-water algæ, which possesses economic as well as scientific interest.

G. L. GOODALE.—“On a Convenient Method of Subjecting Living Cells to Coloring Agents.”

B. D. HALSTED.—“Reserve Food-substances in Twigs,” showing by means of drawings the distribution of the starch in twigs of various kinds.

B. D. HALSTED.—“Notes upon Stamens of Solanaceæ.”

THOMAS MEEHAN.—“On the Position of the Nectar Glands in Echinops,” “On the Epigynous Gland in Diervilla, and the Genesis of Lonicera and Diervilla,” “On the Assumption of Floral Characters by axial growths in *Andromeda catesbaei*,” “On the Significance of Dioecism as illustrated by *Pycnanthemum*.”

F. L. SCRIBNER.—“The Grasses of Roan Mountain.”

In the foregoing list it is impossible to give the substance of the papers without taking more space than we have at our command. This general remark can be justly made, that while there were a number of first-class papers, there were far too many short notes and isolated observations, which ought to have appeared in the Botanical Club, rather than in the Biological Section of the Association.

In order to secure, if possible, a higher grade of papers, the following resolutions were adopted :

Resolved, That one of the topics for discussion by Section F, at the meeting in 1890, shall be “The Geographical Distribution of North American Plants.”

Resolved, That the following appointments be made of members of Section F, who shall be requested to prepare papers upon special parts of the general topic of the Geographical Distribution of North American Plants, viz. :

SERENO WATSON.—“The Relation of the Mexican Flora to that of the United States.”

JOHN MACOUN.—“The Ligneous Plants of the Dominion of Canada.”

JOHN M. COULTER.—“The Distribution of North American Umbelliferæ.”

L. M. UNDERWOOD.—“The Distribution of North American Hepaticæ.”

B. D. HALSTED.—“The Migration of Weeds.”

N. L. BRITTON.—“The General Distribution of North American Plants.”

The present secretary of the section is requested to give formal notification of the persons named, and the secretary of the section for 1890 is hereby requested to give such attention to this matter as may be necessary to perfect the proposed programme by correspondence, and through the circulars of the permanent secretary of the Association.

The next meeting will be held in Indianapolis, beginning August 21.

CHARLES E. BESSEY.

ZOÖLOGY.

The Doctrine of Phagocytes.—The interest excited by the ingenious hypothesis of Metschnikoff is shown by the number of experiments made and the articles written in support or contradiction of the assumption that the mesodermal cells of the Vertebrata inherit the capacity of absorbing and destroying pathogenic bacteria from their ancestors, the unicellular Amœbæ, the mesodermic cells of Coelenterata, Turbellaria, etc. The summary of Dr. H. Bitter's recent critique of the evidence *pro* and *con* is thus presented by the *Journal of the Royal Microscopical Society*.

Unicellular lower animals, amœbæ, and also the mesodermic cells of sponges, take up small plants into their protoplasm, and digest them. In more highly organized animals this intracellular digestion becomes extracellular and fermentative; certain cells, however, still possess a capacity for picking up and dissolving foreign bodies. This contrivance is regarded by Metschnikoff as a special arrangement whereby harmful elements, especially pathogenic organisms, are prevented from penetrating the animal economy, the process being complicated by the resistance made by the parasite to digestion. Those cells which are able to digest foreign bodies are called phagocytes, and are farther subdivided into large and small. Infectious diseases are recovered